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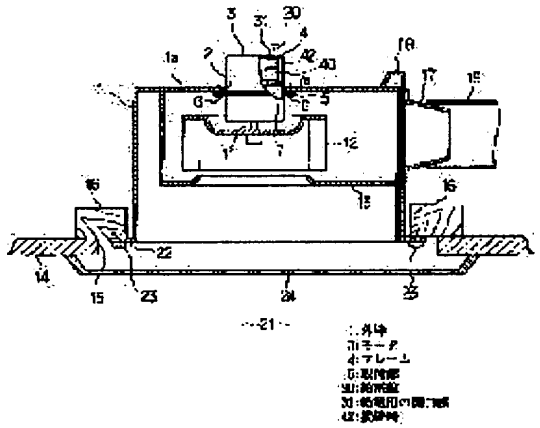
(54) MOTOR FOR VENTILATOR

(57)Abstract:
PROBLEM TO BE SOLVED: To easily remove a motor from the outer frame of a ventilator.
SOLUTION: In a motor 3 whose frame 4 has a flange (mount) 5 to be attached to the outer frame 1 of the ventilator from inside and which has an opening 31 for power supply at a section positioned outward of the outer frame 1 in its attachment state, the opening 31 for power supply is made at the back wall of the frame 4 at a section positioned outside the frame 1 so that a power supply cable 20 jutted out of the opening 31 for power supply of the motor 3 may not get caught by the outer frame 1 when removing the motor 3 from inside the outer frame 1. Hereby, the motor 3 can be removed without going so far as to remove the outer frame 1 from a ceiling 14.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The motor for ventilating fans characterized by the frame forming opening for the electric supply in the back wall of the part located in the method of outside [outer frame / of a frame / said] in what has opening for electric supply into the part located in the method of outside [outer frame / said] in the state of attachment while having the attachment section attached in the outer frame of a ventilating fan from the inner direction.
[Claim 2] The motor for ventilating fans according to claim 1 characterized by having a connector for feeder connection inside a frame corresponding to opening for electric supply.
[Claim 3] The motor for ventilating fans according to claim 1 characterized by equipping opening for electric supply with the connector for feeder connection.
[Claim 4] The motor for ventilating fans according to claim 3 by which the connector for feeder connection is characterized by having the contact section which contacts the external surface of a frame.
[Claim 5] The motor for ventilating fans according to claim 3 or 4 by which the connector for feeder connection is characterized by having the stop section stopped by the inside of a frame.
[Claim 6] The motor for ventilating fans according to claim 1 characterized by enabling selection wearing of either of the connector which forms also in the circumferential side attachment wall of a frame, and connects a feeder to these openings from the method of the back, and the connector which connects a feeder from the side while forming opening for electric supply in the back wall of a frame.
[Claim 7] The motor for ventilating fans according to claim 6 characterized by for the connector with which opening was equipped blockading one opening in a feeder connection part, and blockading opening of another side by the extension of housing.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the motor for ventilating fans which improved the structure for electric supply.
[0002]
[Description of the Prior Art] Conventionally, the ventilating fan for ducts consists of in the ventilating fan, as shown in drawing 8 . A motor 3 to the opening 2 formed in back wall 1a of an outer frame 1 namely, upwards from a lower part Namely, the attachment section slack flange 5 which was inserted in from the way among outer frames 1 to the method of outside, and was formed in the periphery of circumferential side-attachment-wall 4a of the frame 4 of this motor 3 It is contacted by the inferior surface of tongue of the periphery section of opening 2, and the motor 3 is attached in the outer frame 1 when being bound tight by outer frame back wall 1a with two or more screw threads 6 from a way among outer frames 1.
[0003] The motor 3 has the stator 7 and the rotator 8 inside, the opening 10 for the electric supply by which the connector 9 for supplying electric power to coil 7a of a stator 7 was formed in circumferential side-attachment-wall 4a of a frame 4 is equipped, and this is located in the way outside the outer frame 1 in the state of attachment of the motor 3 to the above-mentioned outer frame 1. On the other hand, the ventilation impeller 12 is attached in the revolving shaft 11 of the motor 3 projected in the outer frame 1, and the casing 13 which surrounds this ventilation impeller 12 is attached in the interior of an outer frame 1.
[0004] To the above ventilating fan, the opening 15 for ventilating-fan anchoring is formed in the head lining 14 of a house, and **** 16 is formed in the rear face of the periphery section of this. Furthermore, the connection plate 18 which has the duct connection cylinder 17 is attached in the one side (drawing Nakamigi side) of the **** 16, and the duct 19 for exhaust air is connected to the duct connection cylinder 17.
[0005] the outer frame 1 after it carries out a deer and a ventilating fan connects the feeder 20 of a house to a connector 9 -- the opening 15 of head lining 14 -- the interior of a room of the upper part from a lower part, i.e., a house, -- it inserts in from 21 to an underpart-of-the-roof part, and the inferior surface of tongue of **** 16 is further contacted in the flange 22 formed in the periphery of the opening of an outer frame 1 -- making -- the interior of a room -- it is attached in head lining 14 by binding tight from 21 to **** 16 with two or more screw threads 23. In addition, 24 shows covering, and after anchoring of the outer frame [as opposed to above-mentioned **** 16 for this] 1, it has attached it so that the opening of this may be covered to an outer frame 1.
[0006]
[Problem(s) to be Solved by the Invention] If it is going to demount a motor 3 from a way among outer frames 1, attaching an outer frame 1 in head lining 14 when need, such as check of a motor 3 and exchange, is produced in the case of the above-mentioned conventional thing, the feeder 20 in the condition of it having been located in the way outside the outer frame 1, and having jutted out of the motor 3 is caught in the periphery section of the opening 2 of outer frame back wall 1a, and cannot demount a motor 3. for this reason, removal of a motor 3 -- an outer frame 1 -- from head lining 14 -- demounting -- the interior of a room -- draw in 21, and demount a connector 9 from a motor 3 on it, or demount a feeder 20 from a connector 9, and pass the procedure of demounting a motor 3 from an outer frame 1 -- it needed to carry out and was troublesome.
[0007] It is in offering the motor for ventilating fans which offers the motor for ventilating fans by which removal from the outer frame of a ventilating fan can mainly do the purpose easily by making this invention in view of an above-mentioned situation therefore, in addition is made to selection of the connection

direction of the feeder according to the situation of a ventilating-fan attach point.
[0008]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, the motor for ventilating fans of this invention is characterized by for the frame to form opening for the electric supply in the back wall of the part located in the method of outside [outer frame / of a frame / said] in what has opening for electric supply into the part located in the method of outside [outer frame / said] in the state of attachment, while having the attachment section attached in the outer frame of a ventilating fan from the inner direction (invention of claim 1).
[0009] When demounting a motor from the outer frame of a ventilating fan according to this thing, even if opening for that electric supply is formed in the frame back wall of the part located in the method of outside [outer frame] and draws from a way the feeder jutted out of opening for electric supply of a motor among outer frames, it is not caught in an outer frame. Therefore, it is not necessary to demount an outer frame from head lining, and removal of a motor can be performed.
[0010] In this case, it is good to have a connector for feeder connection inside a frame corresponding to opening for electric supply (invention of claim 2). At this thing, since a connector is covered with the frame of a motor, protection of a connector can be performed with the frame of a motor.
[0011] Moreover, the connector for feeder connection is good also as a configuration with which opening for electric supply is equipped (invention of claim 3). In this thing, the nest of a connector can do those all by not inserting into the frame of a motor.
[0012] Furthermore, the connector with which opening for above-mentioned electric supply is equipped is good to have the contact section which contacts the external surface of a frame (invention of claim 4). At this thing, the receptacle of the chip box (chip box which inserts a connector in the connection partner inside a frame, and is connected) which builds a connector into a frame, and the chip box which inserts a feeder in the incorporated connector and is connected to it is made with the frame which the contact section contacted.
[0013] In addition, the connector with which opening for electric supply is equipped may have the stop section stopped by the inside of a frame (invention of claim 5). At this thing, while the omission of the connector (it inserted in the connection partner inside a frame, and connected) built into the frame can prevent in the stop section stopped by the inside of a frame, the stop of the chip box which draws out the feeder inserted in the connector can be performed with the frame which stopped the stop section.
[0014] It is good to, enable selection wearing of either of the connector which forms also in the circumferential side attachment wall of a frame while forming opening for electric supply in the back wall of a frame, and connects a feeder to these openings from the method of the back, and the connector which connects a feeder from the side on the other hand (invention of claim 6).
[0015] In this thing, in the state of attachment of a ventilating fan, if the allowances of a tooth space are in the method of the back which is the method of the outside of shaft orientations of the motor projected out of the outer frame of this ventilating fan It is good to equip opening for electric supply with the connector which connects a feeder from the method of the back, and if there are no allowances of a tooth space in the method of the outside of shaft orientations of a motor (method of the back), it is good to equip opening for electric supply with the connector which connects a feeder from the side (if the allowances of a tooth space are in the side which is a method of the outside of the direction of a path of a motor). Namely, it becomes it comes not only to be able to perform removal from the outer frame of a ventilating fan easily, but possible to selection of the connection direction of the feeder according to the situation of the attach point of a ventilating fan.
[0016] And the connector with which opening was equipped in this case is good to blockade one opening in a feeder connection part, and to blockade opening of another side by the extension of housing (invention of claim 7). In this thing, it can blockade without leaving opening for electric supply, and the sealing nature of a motor is not spoiled.
[0017]
[Embodiment of the Invention] Hereafter, it explains with reference to drawing 1 per 1st example of this invention thru/or drawing 3 . First, to drawing 1 , the configuration of the ventilating fan for ducts is shown also in the ventilating fan, and identically to the opening 31 for electric supply of a motor 3, and the configuration of the ventilating fan for ducts shown in previous drawing 8 except connector 40 and SL terminal 42 therefore, this gives the same sign to the same part as it, and omits explanation.
[0018] The opening 31 for electric supply of a motor 3 is beforehand formed in back wall 4b of a part located in the way outside the outer frame 1 of the above-mentioned ventilating fan for ducts, and the part

which it side-attachment-wall [circumferential] 4a Approaches especially (drawing Nakamigi side) among the frame 4 of the motor 3 attached in the outer frame 1 of the above-mentioned ventilating fan for ducts, as shown in a detail at drawing 2 . The internal configuration of a motor 3 is shown in drawing 2 again, and the stator 7 arranged in the interior of a frame 4 has coil 7a, where a bobbin 32 is looped around. The bobbin 32 has the terminal-block fixed part 33 in the left-hand side section in drawing. The rotator 8 arranged in the interior of a stator 7 has the revolving shaft 11 in the core, and is supporting it by the bearing 34 and 35 which arranged this revolving shaft 11 in the drawing Nakagami section and the lower part in a frame 4.
[0019] And the terminal block 36 is arranged on a bobbin 32. This terminal block 36 inserts the conductor 37 in which a part is shown to drawing 3 , fabricates it with synthetic resin, and that conductor 37 constitutes the circuit for supplying electric power to coil 7a of said stator 7 from a side which omitted illustration by drawing 3 , and it constitutes the terminal 38 which stands up up from a side illustrated to drawing 3 R> 3. The connector housing 39 which carries out opening to a terminal block 36 and one in the upper part is formed in the perimeter of a terminal 38, and these constitute the connector 40 of a female form.
[0020] Moreover, by protruding on an inferior surface of tongue the attachment foot 41 shown in drawing 2 , inserting this attachment foot 41 in said terminal-block fixed part 33, and fixing to a terminal block 36, the terminal block 36 was attached in the bobbin 32 (stator 7), and the circuit for supplying electric power to coincidence at coil 7a of said stator 7 is connected to that coil 7a.
[0021] The deer was carried out, and as shown in drawing 3 , the SL (screw loess) terminal 42 which is that example is connected to the connector 40 of said female type in a connector and this case. In the housing 43 made of synthetic resin, this SL terminal 42 has contained the conductor 44 and the supporter 45, and forms the insertion opening 46 which faces among them from the method of drawing Nakagami which is the method of the back of a motor 3 at housing 43. Moreover, housing 43 consists of subject section 43a by the side of the method of drawing Nakagami of having the insertion opening 46, and male form connector housing section 43b by the side of a lower part, and the forked connection 47 extended from the conductor 44 is located in the male form connector housing section 43b.
[0022] With this configuration, the SL terminal 42 is inserted into a frame 4 through the opening 31 for electric supply of the motor 3 formed in the above-mentioned frame back wall 4b, and male form connector housing section 43b is further inserted into the female form connector 40 of said terminal block 36. Then, a connection 47 is hung and connected to a terminal 38. Moreover, the SL terminal 42 is located in the interior of a frame 4 <TXF FR=0001 HE=250 WI=080 LX=0200 LY=0300> in this condition corresponding to the opening 31 for electric supply.
[0023] And the point which exfoliated the pre-insulation of the feeder 20 of a house is inserted in the SL terminal 42 through the insertion opening 46 in this condition from the opening 31 for electric supply. Then, every time the point of the feeder 20 is pinched by a conductor 44 and the supporter 45 and it pulls it to a conductor 44, from the connection part of the above-mentioned connection 47 and a terminal 38, further, through the conductor 37 (connection circuit) of a terminal block 36, electrical connection of it is carried out to coil 7a of said stator 7, and, also mechanically, it is held at coincidence.
[0024] after a ventilating fan connects a feeder 20 to the SL terminal 42 in this way -- like the above-mentioned -- an outer frame 1 -- the opening 15 of head lining 14 -- the interior of a room of the upper part from a lower part, i.e., a house, -- it inserts in from 21 to an underpart-of-the-roof part, and the inferior surface of tongue of **** 16 is further contacted in the flange 22 of an outer frame 1 -- making -- the interior of a room -- it attaches in head lining 14 by binding tight from 21 to **** 16 with two or more screw threads 23.
[0025] Now, when the need of demounting a motor 3 for check of a motor 3, exchange, etc. is produced in the state of above-mentioned attachment, covering 24 is first demounted from an outer frame 1, subsequently casing 13 is demounted, and the ventilation impeller 12 is demounted from the revolving shaft 11 of a motor 3. And a motor 3 is demounted from an outer frame 1 by loosening **** 6. At this time, even if the opening 31 for that electric supply is formed in frame back wall 4b instead of frame periphery side-attachment-wall 4a of a part located in the method of outside [outer frame / 1 / of a ventilating fan] and draws from a way the feeder 20 in the condition of having jutted out of the opening 31 for electric supply of a motor 3, among outer frames, it is not caught in an outer frame 1. Therefore, it is not necessary to demount an outer frame 1 from head lining 14, removal of a motor 3 can be performed, and, in the case of the thing of this configuration, removal of the motor 3 from the outer frame 1 of a ventilating fan can be performed easily in this way.
[0026] In addition, in order to perform check, exchange, etc. of the demounted motor, it is necessary to demount a feeder 20 from the SL terminal 42. On the other hand, by the SL terminal's 42 equipping housing

43 with the release button which is not illustrated besides the above-mentioned each part article, and pressing this release button by tools, such as a driver What is necessary is just to draw [frame / 4 / of a motor 3] out a feeder 20 further from the SL terminal 42, after doing in this way, since point 45a (refer to drawing 3) of a supporter 45 separated from the feeder 20 and pinching of the feeder 20 by this supporter 45 and the conductor 44 was canceled.

[0027] In addition, since it is considering as the configuration which has the SL terminal 42 inside the frame 4 of a motor 3 corresponding to the opening 31 for electric supply in the case of the thing of the above-mentioned configuration and the SL terminal 42 is covered with this with the frame 4 of a motor 3, protection of the SL terminal 42 can be performed with the frame 4 of a motor 3.

[0028] To the above, drawing 4 thru/or drawing 7 show the 2nd and 3rd examples of this invention, gives the same sign to the same part as the 1st example, respectively, omits explanation, and describes only a different part.

[0029] In the 2nd example shown in [2nd example] drawing 4 and drawing 5 The SL terminal 51 as a connector which replaces the above-mentioned SL terminal 42 is greatly formed in the upper part in drawing from the SL terminal 42. the periphery of the topmost part of the housing 52 of this -- the contact section 53 -- for example, the collar covering the perimeter -- it forms in a ** and the stop section 54 is formed in the periphery of a lower part which separated the distance of a plate Health and Welfare Minister this of frame back wall 4b of a motor 3 rather than it in the shape of [two or more / partial] a pawl.

[0030] In addition, the contact section 53 has stopped the magnitude in the magnitude which does not project in the direction of a path from the frame 4 of a motor 3. Moreover, housing 52 forms the periphery dimension except the contact section 53 and the stop section 54 in opening 31 and **** identitas for electric supply of a motor 3. Furthermore, housing 52 is considered as the configuration which has subject section 52a which contains the same above-mentioned conductor 56 and same above-mentioned supporter 57 as a conductor 44 and a supporter 45, and male form connector housing section 52b which contains the above-mentioned connection 47 and the same connection 58 while it has the above-mentioned insertion opening 46 and the same insertion opening 55.

[0031] Moreover it has equipped opening 31 by inserting the SL terminal 51 in the opening 31 for electric supply of a motor 3, making the inside of a frame 4 stop the stop section 54, and making the contact section 53 contact the external surface of a frame 4 with this configuration, male form connector housing section 52b was inserted into the female form connector 40 of a terminal block 36, and the connection 58 is connected to a terminal 38 at it and coincidence. Thus, in what was constituted, the nest of the SL terminal 51 is made by not inserting the all into the frame 4 of a motor 3, and the nest of the SL terminal 51 is made so much easily.

[0032] Moreover, by having the contact section 53 to which the SL terminal 51 contacts the external surface of a frame 4 in this case The chip box (chip box which inserts the SL terminal 51 in the female form connector 40 of the terminal block 36 which is the connection partner of the frame 4 interior, and is connected) which builds the SL terminal 51 into a frame 4, It can prevent that the receptacle of the chip box which inserts a feeder 20 and is connected has by being made for the incorporated SL terminal 51 with the frame 4 which the contact section 53 contacted, and big force which spoils connection with stator winding 7a of this in a terminal block 36 acts.

[0033] The SL terminal 51 also has the stop section 54 stopped by the inside of a frame 4. In addition, by this While the omission of the SL (it inserted and connected with female form connector 40) terminal 51 built into the frame 4 is made in the stop section 54 stopped by the inside of a frame 4 It can prevent that the big force in which the stop of the chip box which draws out the feeder 20 inserted in the SL terminal 51 has by the ability doing with the frame 4 which stopped the stop section 54, and spoils connection with stator winding 7a of this in a terminal block 36 also in this case acts.

[0034] In the 3rd example shown in [3rd example] drawing 6 and drawing 7 , while forming the opening 61 for electric supply in back wall 4b of the frame 4 of a motor 3, the opening 62 for electric supply is formed also in circumferential side-attachment-wall 4a of the frame 4 of a motor 3. In this case, those openings 61 and 62 are put in a row to one, and it is made to carry out selection wearing of the SL terminal 63 or the SL terminal 64 as a connector which replaces the above-mentioned SL terminals 42 and 51 at these (drawing 6 shows the condition of having equipped with the SL terminal 63, and drawing 7 shows the condition of having equipped with the SL terminal 64).

[0035] Among both the above-mentioned SL terminals 63 and 64, the SL terminal 63 is considered as the configuration which has subject section 65a which contains the same above-mentioned conductor 67 and same above-mentioned supporter 68 as a conductor 44 and a supporter 45, and male form connector housing

section 65b which contains the sideways connection 69 unlike the above-mentioned connection 47 while it has the above-mentioned insertion opening 46 and the insertion opening [being the same (upper part opening)] 66 in housing 65. Furthermore, housing 65 has the above-mentioned stop section 54 and the same stop section 71 while it has extension 65c of the gestalt extended to the method of drawing 6 Nakamigi from subject section 65a, in addition has the above-mentioned contact section 53 and the same contact section 70.

[0036] On the other hand, the SL terminal 64 is considered as the configuration which has subject section 72a which contains a sideways conductor 74 and a sideways supporter 75 unlike the above-mentioned conductor 44 and a supporter 45, and male form connector housing section 72b which contains the sideways connection 76 unlike the above-mentioned connection 47 while it has the insertion opening 73 which carries out opening to housing 72 in the side unlike the above-mentioned insertion opening 46. Furthermore, housing 72 forms the above-mentioned stop section 54 and the same stop section 78 while it has extension 72c of the gestalt extended to the method of drawing 7 Nakagami from subject section 72a, in addition forms the above-mentioned contact section 53 and the same contact section 77.
[0037] And unlike the above-mentioned terminal 38, in the terminal block 36 in a motor 3, the connector 81 of a female form consists of a sideways terminal 79 and connector housing 80 which surrounds this and carries out opening to the side to them. When equipping openings 61 and 62 with the SL terminal 63, insert the SL terminal 63 in openings 61 and 62, the inside of a frame 4 is made to stop the stop section 71, and the contact section 70 is made to contact the external surface of a frame 4 with this configuration, as shown in drawing 6 . Thereby, male form connector housing section 65b is inserted into the female form connector 81 of a terminal block 36, and a connection 69 is connected to a terminal 79 again.
[0038] Where openings 61 and 62 are equipped with the SL terminal 63 in this way A feeder 20 by inserting in the SL terminal 63 through the insertion opening 66 from the upper part which is a method of the back of a motor 3 If it is pinched by a conductor 67 and the supporter 68 and pulls to a conductor 67, from the connection part of the above-mentioned connection 69 and a terminal 79, further, through the conductor 37 (connection circuit) of a terminal block 36, electrical connection is carried out to coil 7a of said stator 7, and, also mechanically, it is held at coincidence. Therefore, the SL terminal 63 is a connector which connects a feeder 20 from the method of the back. Moreover, in this condition, the SL terminal 63 blockades opening 61 in the connection part (subject section 65a of housing 65) of a feeder 20, and blockades opening 62 by extension 65c of housing 65.
[0039] On the other hand, when equipping openings 61 and 62 with the SL terminal 64, insert the SL terminal 64 in openings 61 and 62, the inside of a frame 4 is made to stop the stop section 78, and the contact section 77 is made to contact the external surface of a frame 4, as shown in drawing 7 . Thereby, male form connector housing section 72b is inserted into the female form connector 81 of a terminal block 36, and a connection 76 is connected to a terminal 79 again.
[0040] Where openings 61 and 62 are equipped with the SL terminal 64 in this way A feeder 20 by inserting in the SL terminal 64 through the insertion opening 73 from the side of a motor 3 If it is pinched by a conductor 74 and the supporter 75 and pulls to a conductor 74, from the connection part of the above-mentioned connection 76 and a terminal 79, further, through the conductor 37 (connection circuit) of a terminal block 36, electrical connection is carried out to coil 7a of said stator 7, and, also mechanically, it is held at coincidence. Therefore, the SL terminal 64 is a connector which connects a feeder 20 from the side. Moreover, in this condition, the SL terminal 64 blockades opening 62 in the connection part (subject section 72a of housing 72) of a feeder 20, and blockades opening 61 by extension 72c of housing 72.
[0041] In addition, although both the contact sections 70 and 77 that contacted the external surface of a frame 4 in these cases are located in a way outside a frame 4, they make these protrusion dimensions the dimension which is not applied to the periphery section of the opening 2 for motor attachment in the outer frame 1 of a ventilating fan, i.e., the dimension which does not check removal of the motor 3 out of an outer frame 1.
[0042] Thus, in what was constituted, it is in the attachment condition of a ventilating fan, and if the allowances of a tooth space are in the method of the back which is the method of the outside of shaft orientations of the motor 3 projected out of the outer frame 1 of this ventilating fan, it will be good to equip openings 61 and 62 with the SL terminal 63 which is the connector which connects a feeder 20 from the method of the back, and removal of the motor 3 from the outer frame 1 of a ventilating fan can be easily performed like the above-mentioned in this case.
[0043] On the other hand, if there are no allowances of a tooth space by the low attic 82 being in the method of the outside of shaft orientations of a motor 3 (method of the back) etc. as shown in drawing 7 , it will be

good to equip openings 61 and 62 with the SL terminal 64 which is the connector which connects a feeder 20 from the side (if the allowances of a tooth space are in the side which is a method of the outside of the direction of a path of a motor 3), and can do in this way to selection of the connection direction of the feeder 20 according to the situation of the attach point of ventilating fan.

[0044] In addition, the SL terminals 63 and 64 with which openings 61 and 62 were equipped in this case blockade one side of the openings 61 and 62 in the connection part of a feeder 20, and he is trying to blockade another side by the extensions 65a and 72a of housing 65 and 72. It can blockade by this, without leaving the openings 61 and 62 for electric supply, and can avoid spoiling the sealing nature of a motor 3.

[0045] In addition, openings 61 and 62 are not put in a row to one, but may be formed separately. Moreover, you may make it insert and connect to the female form connectors 40 and 81 the connector illustrated with SL terminal through all examples as a connector of a male form which connects the feeder 20 except SL terminal by thread fastening etc. Furthermore, in a motor 3, it does not have a terminal block 36, but the female form connectors 40 and 81 etc. are good also as a configuration connected to stator winding 7a through a path cord from the connection partner of a connector.

[0046] In addition, originally other need components, such as a current fuse contained in the circuitry of a terminal block 36, may be built in a connector, and the circuitry of a terminal block 36 can be easily made by it. Furthermore, a ventilating fan may not be restricted to the ventilating fan for ducts, either, but may be a ventilating fan for pipes etc.

[0047]

[Effect of the Invention] As explained above, according to the motor for ventilating fans of this invention, removal from the outer frame of a ventilating fan can be easily performed mainly from having formed opening for electric supply in the back wall of the part located in the method of outside [outer frame / of a frame / ventilating-fan]. Moreover, especially, opening for electric supply is formed in the back wall and the circumferential side attachment wall of a frame, and it can do to selection of the connection direction of the feeder according to the situation of a ventilating-fan attach point in that whose selection wearing of either of the connector which connects a feeder to these openings from the method of the back, and the connector which connects a feeder from the side was enabled.

[Translation done.]

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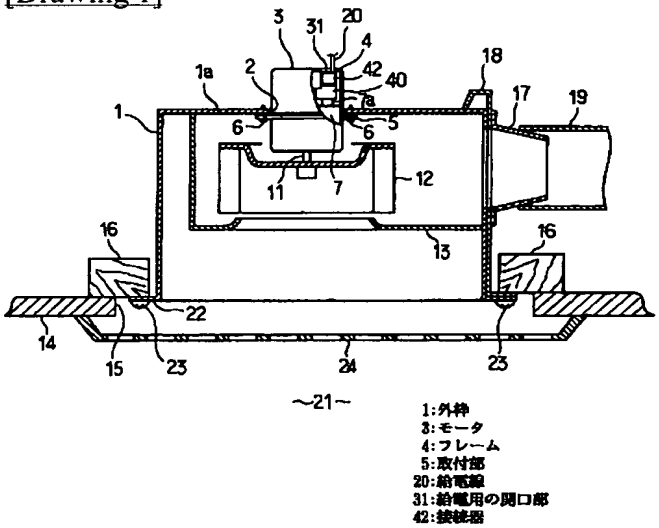
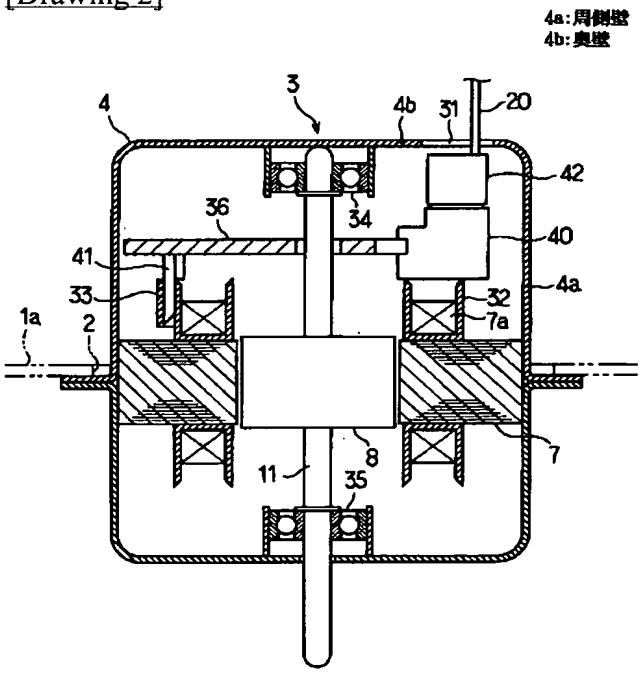
DRAWINGS

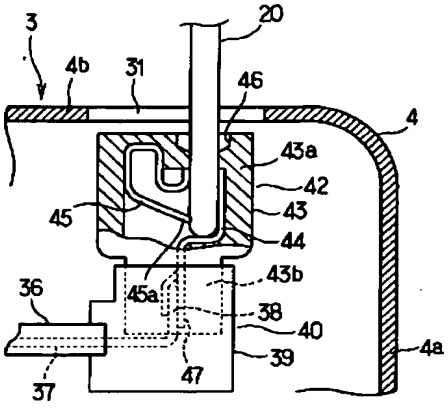
[Drawing 1]



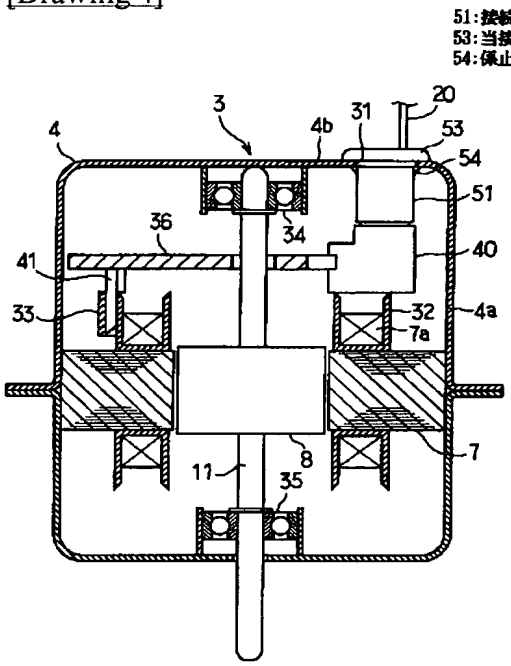
[Drawing 2]



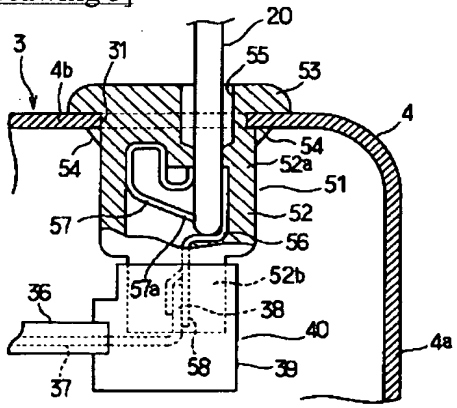
[Drawing 3]



[Drawing 4]

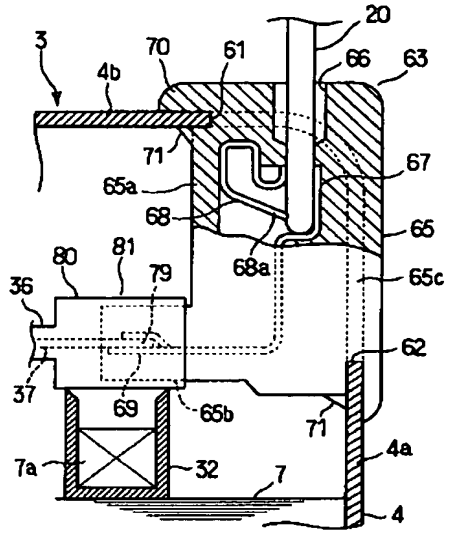


[Drawing 5]

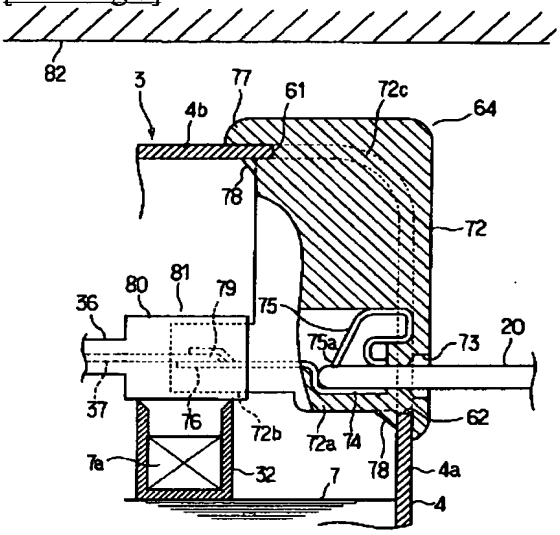


[Drawing 6]

61, 62:給電用の開口部
63:接続器
65:ハウジング
65c:延長部

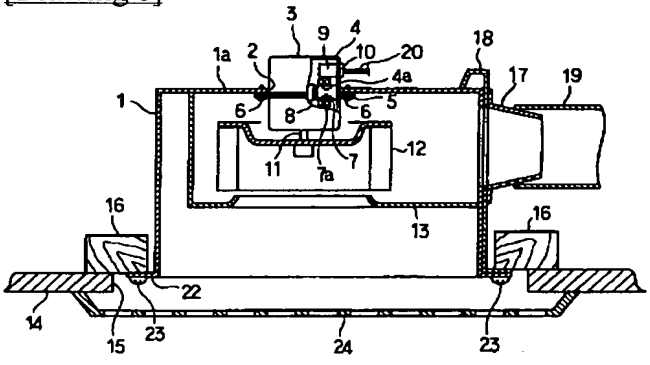


[Drawing 7]



64:接続器
72:ハウジング
72c:延長部

[Drawing 8]



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[Translation done.]

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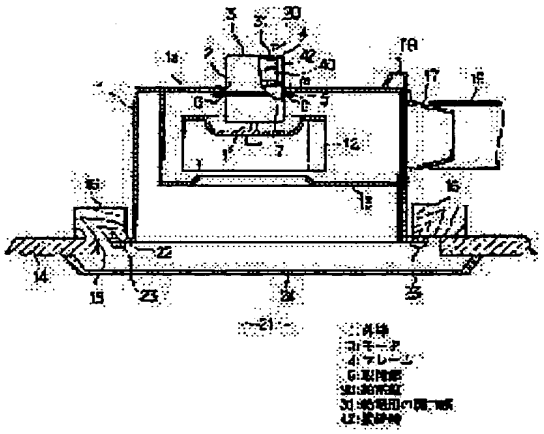
(71)Applicant : TOSHIBA CORP
(72)Inventor : YAMADA TAKESHI

(54) MOTOR FOR VENTILATOR

(57)Abstract:
PROBLEM TO BE SOLVED: To easily remove a motor from the outer frame of a ventilator.
SOLUTION: In a motor 3 whose frame 4 has a flange (mount) 5 to be attached to the outer frame 1 of the ventilator from inside and which has an opening 31 for power supply at a section positioned outward of the outer frame 1 in its attachment state, the opening 31 for power supply is made at the back wall of the frame 4 at a section positioned outside the frame 1 so that a power supply cable 20 jutted out of the opening 31 for power supply of the motor 3 may not get caught by the outer frame 1 when removing the motor 3 from inside the outer frame 1. Hereby, the motor 3 can be removed without going so far as to remove the outer frame 1 from a ceiling 14.



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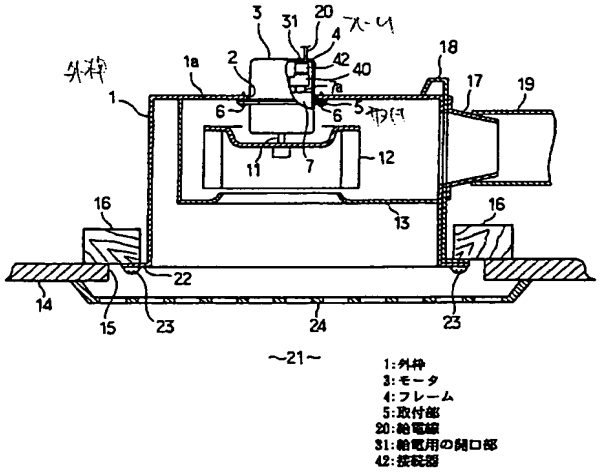
(54)【発明の名称】　換気扇用モータ

(57)【要約】
【課題】　換気扇の外枠からのモータの取外しが容易にできるようにする。
【解決手段】　フレーム４が、換気扇の外枠１に内方から取付けられるフランジ（取付部）５を有すると共に、その取付状態で外枠１より外方に位置する部分に給電用の開口部３１を有するモータ３において、その給電用の開口部３１を、外枠１より外方に位置する部分のフレーム４奥壁に形成することにより、外枠１の内方からモータ３を取外すとき、モータ３の給電用の開口部３１から張出した給電線２０が外枠１に引掛かることがないようにした。これにより、外枠１を天井１４から取外すまでもなく、モータ３の取外しができる。



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【特許請求の範囲】

【請求項１】　フレームが、換気扇の外枠に内方から取付けられる取付部を有すると共に、その取付状態で前記外枠より外方に位置する部分に給電用の開口部を有するものにおいて、

その給電用の開口部を、フレームの前記外枠より外方に位置する部分の奥壁に形成したことを特徴とする換気扇用モータ。

【請求項２】　給電用の開口部に対応して、フレームの内部に給電線接続用の接続器を有することを特徴とする請求項１記載の換気扇用モータ。

【請求項３】　給電用の開口部に、給電線接続用の接続器を装着したことを特徴とする請求項１記載の換気扇用モータ。

【請求項４】　給電線接続用の接続器が、フレームの外面に当接する当接部を有することを特徴とする請求項３記載の換気扇用モータ。

【請求項５】　給電線接続用の接続器が、フレームの内面に係止される係止部を有することを特徴とする請求項３又は４記載の換気扇用モータ。

【請求項６】　給電用の開口部を、フレームの奥壁に形成すると共に、フレームの周側壁にも形成し、これらの開口部に、給電線を奥方から接続する接続器と、給電線を側方から接続する接続器とのいずれかを選択装着可能としたことを特徴とする請求項１記載の換気扇用モータ。

【請求項７】　開口部に装着された接続器が、給電線接続部分で一方の開口部を閉塞し、他方の開口部をハウジングの延長部で閉塞することを特徴とする請求項６記載の換気扇用モータ。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は給電のための構造を改良した換気扇用モータに関する。

【０００２】

【従来の技術】従来より、換気扇、中でもダクト用換気扇は、図８に示すように構成されている。すなわち、外枠１の奥壁１ａに形成された開口部２に、モータ３が下方から上方へ、すなわち、外枠１の内方から外方へ挿通され、このモータ３のフレーム４の周側壁４ａの外周に形成された取付部たるフランジ５が、開口部２の周縁部の下面に当接されて、外枠１の内方から複数のねじ６により外枠奥壁１ａに締め付けられることによって、モータ３が外枠１に取付けられている。

【０００３】モータ３は、内部に固定子７や回転子８を有しており、そして、固定子７の巻線７ａに給電するための接続器９が、フレーム４の周側壁４ａに形成された給電用の開口部１０に装着され、これが、上述の外枠１に対するモータ３の取付状態では、外枠１の外方に位置されている。一方、外枠１内に突出したモータ３の回転

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軸１１には、送風羽根車１２が取付けられ、この送風羽根車１２を囲繞するケーシング１３が外枠１の内部に取付けられている。

【０００４】以上の換気扇に対し、家屋の天井１４には、換気扇取付けのための開口部１５が形成され、これの周縁部の裏面には野縁１６が設けられている。更に、その野縁１６の一方側（図中右側）には、ダクト接続筒１７を有する接続板１８が取付けられており、ダクト接続筒１７に排気用のダクト１９が接続されている。

【０００５】しかして、換気扇は、接続器９に家屋の給電線２０を接続した後、外枠１を天井１４の開口部１５に下方から上方へ、すなわち、家屋の室内２１から天井裏部分へ挿通し、更に、外枠１の下面開口部の周縁に形成されたフランジ２２を野縁１６の下面に当接させて、室内２１から複数のねじ２３により野縁１６に締め付けることによって、天井１４に取付けられている。なお、２４はカバーを示しており、これを、上述の野縁１６に対する外枠１の取付け後、外枠１にこれの下面開口部を覆うように取付けている。

【０００６】

【発明が解決しようとする課題】上記従来のものの場合、モータ３の点検や交換等の必要を生じたとき、外枠１を天井１４に取付けたまま、モータ３を外枠１の内方から取外そうとすると、外枠１の外方に位置してモータ３から張出した状態にある給電線２０が外枠奥壁１ａの開口部２の周縁部に引掛かって、モータ３を取外すことができない。このため、モータ３の取外しは、外枠１を天井１４から取外して室内２１に引き込み、その上で、モータ３から接続器９を取外し、もしくは接続器９から給電線２０を取外し、そして、外枠１からモータ３を取外すという手順を経て行う必要があり、厄介であった。

【０００７】本発明は上述の事情に鑑みてなされたものであり、従ってその目的は、主として、換気扇の外枠からの取外しが容易にできる換気扇用モータを提供し、そのほか、換気扇取付箇所の状況に応じた給電線の接続方向の選択までできる換気扇用モータを提供するにある。

【０００８】

【課題を解決するための手段】上記目的を達成するために、本発明の換気扇用モータは、フレームが、換気扇の外枠に内方から取付けられる取付部を有すると共に、その取付状態で前記外枠より外方に位置する部分に給電用の開口部を有するものにおいて、その給電用の開口部を、フレームの前記外枠より外方に位置する部分の奥壁に形成したことを特徴とする（請求項１の発明）。

【０００９】このものによれば、換気扇の外枠からモータを取外すとき、モータの給電用の開口部から張出す給電線は、その給電用の開口部が外枠より外方に位置する部分のフレーム奥壁に形成されていることで、外枠の内方から引いても外枠に引掛かることがない。よって、外枠を天井から取外すまでもなく、モータの取外しができ

る。

【００１０】この場合、給電用の開口部に対応して、フレームの内部に給電線接続用の接続器を有すると良い（請求項２の発明）。このものでは、接続器がモータのフレームで覆われるので、接続器の保護がモータのフレームでできる。

【００１１】又、給電線接続用の接続器は、給電用の開口部に装着する構成としても良い（請求項３の発明）。このものでは、接続器の組込みが、その全部をモータのフレーム内に挿入するまでもなくできる。

【００１２】更に、上述の給電用の開口部に装着する接続器は、フレームの外面に当接する当接部を有すると良い（請求項４の発明）。このものでは、接続器をフレームに組込む折り（接続器をフレーム内部の接続相手に差込み接続する折り）や、組込んだ接続器に給電線を差込み接続する折りの受けが、当接部が当接したフレームでできる。

【００１３】加えて、給電用の開口部に装着する接続器は、フレームの内面に係止される係止部を有していても良い（請求項５の発明）。このものでは、フレームに組込んだ（フレーム内部の接続相手に差込み接続した）接続器の抜けが、フレームの内面に係止された係止部で防止できると共に、接続器に差込んだ給電線を引き抜く折りの止めが、係止部を係止したフレームでできる。

【００１４】一方、給電用の開口部は、フレームの奥壁に形成すると共に、フレームの周側壁にも形成し、これらの開口部に、給電線を奥方から接続する接続器と、給電線を側方から接続する接続器とのいずれかを選択装着可能とすると良い（請求項６の発明）。

【００１５】このものでは、換気扇の取付状態で、該換気扇の外枠外に突出したモータの軸方向外方である奥方にスペースの余裕があれば、給電線を奥方から接続する接続器を給電用の開口部に装着すると良く、モータの軸方向外方（奥方）にスペースの余裕がなければ（モータの径方向外方である側方にスペースの余裕があれば）、給電線を側方から接続する接続器を給電用の開口部に装着すると良い。すなわち、換気扇の外枠からの取外しが容易にできるようになるだけでなく、換気扇の取付箇所の状況に応じた給電線の接続方向の選択までできるようになる。

【００１６】そして、この場合、開口部に装着された接続器は、給電線接続部分で一方の開口部を閉塞し、他方の開口部をハウジングの延長部で閉塞すると良い（請求項７の発明）。このものでは、給電用の開口部を余すことなく閉塞でき、モータの密閉性を損なうことがない。

【００１７】

【発明の実施の形態】以下、本発明の第１実施例につき、図１ないし図３を参照して説明する。まず、図１には、換気扇、中でもダクト用換気扇の構成を示しており、これは、モータ３の給電用の開口部３１と、コネクタ４０、及びＳＬ端子４２以外、先の図８に示したダクト用換気扇の構成と同一であり、従って、それと同一の部分に同一の符号を付して説明を省略する。

【００１８】モータ３の給電用の開口部３１は、詳細には図２に示すように、上記ダクト用換気扇の外枠１に取付けたモータ３のフレーム４中、上記ダクト用換気扇の外枠１の外方に位置した部分の奥壁４ｂ、中でもそれの周側壁４ａ寄り（図中右側）の部分にあらかじめ形成している。図２には又、モータ３の内部構成を示しており、フレーム４の内部に配設した固定子７は、巻線７ａをボビン３２に巻装した状態で有している。ボビン３２は図中左側部に端子台固定部３３を有している。固定子７の内部に配設した回転子８は、中心部に回転軸１１を有しており、この回転軸１１をフレーム４内の図中上部と下部とに配設した軸受３４，３５により支承している。

【００１９】そして、ボビン３２上には端子台３６を配設している。この端子台３６は、図３に一部を示す導体３７をインサートして合成樹脂により成形したものであり、その導体３７は、図３で図示を省略した側で、前記固定子７の巻線７ａに給電するための回路を構成し、図３に図示した側で、上方に起立するターミナル３８を構成している。ターミナル３８の周囲には、例えば端子台３６と一体に上方に開口するコネクタハウジング３９を形成しており、これらによって、雌形のコネクタ４０を構成している。

【００２０】又、端子台３６には、図２に示す取付脚４１を下面に突設しており、この取付脚４１を前記端子台固定部３３に挿入して固定することにより、端子台３６をボビン３２（固定子７）に取付け、同時に、前記固定子７の巻線７ａに給電するための回路をその巻線７ａに接続している。

【００２１】しかして、前記雌形のコネクタ４０には、図３に示すように、接続器、この場合、その一例であるＳＬ（スクリューレス）端子４２を接続している。このＳＬ端子４２は、合成樹脂製のハウジング４３内に、導体４４と保持体４５とを収納しており、それらの間にモータ３の奥方である図中上方より臨む挿入口４６をハウジング４３に形成している。又、ハウジング４３は、挿入口４６を有する図中上方側の主体部４３ａと、下方側の雄形コネクタハウジング部４３ｂとから成っており、その雄形コネクタハウジング部４３ｂ内には、導体４４から延長した二股の接続部４７が位置している。

【００２２】この構成で、ＳＬ端子４２を、前述のフレーム奥壁４ｂに形成したモータ３の給電用の開口部３１を通してフレーム４内に挿入し、更に、雄形コネクタハウジング部４３ｂを前記端子台３６の雌形コネクタ４０内に挿入する。すると、接続部４７がターミナル３８に被さって接続される。又、この状態で、ＳＬ端子４２は、給電用の開口部３１に対応して、フレーム４の内部

に位置する。

【００２３】そして、この状態で、ＳＬ端子４２には、家屋の給電線２０の絶縁被覆を剥離した先端部を給電用の開口部３１から挿入口４６を通して差込む。すると、その給電線２０の先端部は、導体４４と保持体４５とに挟持されて導体４４に、ひいては上記接続部４７とターミナル３８との接続部分から、更に端子台３６の導体３７（接続回路）を介して、前記固定子７の巻線７ａに電気接続され、同時に機械的にも保持される。

【００２４】換気扇は、このようにＳＬ端子４２に給電線２０を接続した上で、前述のごとく、外枠１を天井１４の開口部１５に下方から上方へ、すなわち、家屋の室内２１から天井裏部分へ挿通し、更に、外枠１のフランジ２２を野縁１６の下面に当接させて、室内２１から複数のねじ２３により野縁１６に締め付けることによって、天井１４に取付ける。

【００２５】さて、上述の取付状態で、モータ３の点検や交換等のためにモータ３を取外す必要を生じたときには、まず外枠１からカバー２４を取外し、次いでケーシング１３を取外して、送風羽根車１２をモータ３の回転軸１１から取外す。そして、ねじ６を緩め取ることによってモータ３を外枠１から取外す。このとき、モータ３の給電用の開口部３１から張出した状態にある給電線２０は、その給電用の開口部３１が換気扇の外枠１より外方に位置する部分のフレーム周側壁４ａでなく、フレーム奥壁４ｂに形成されていることで、外枠の内方から引いても外枠１に引掛かることがない。よって、外枠１を天井１４から取外すまでもなく、モータ３の取外しができるものであり、かくして、本構成のものの場合、換気扇の外枠１からのモータ３の取外しが容易にできる。

【００２６】なお、取外したモータの点検や交換等を行うためには、ＳＬ端子４２から給電線２０を取外す必要がある。これに対して、ＳＬ端子４２は、ハウジング４３に前述の各部品のほかに図示しないリリースボタンを具えており、このリリースボタンをドライバー等の工具で押圧することによって、保持体４５の先端部４５ａ（図３参照）が給電線２０から離れ、該保持体４５と導体４４とによる給電線２０の挟持が解除されるので、このようにした上で、給電線２０をＳＬ端子４２から、更にはモータ３のフレーム４から引き抜けば良い。

【００２７】加えて、上記構成のものの場合、給電用の開口部３１に対応して、モータ３のフレーム４の内部にＳＬ端子４２を有する構成としており、これによって、ＳＬ端子４２がモータ３のフレーム４で覆われるので、ＳＬ端子４２の保護がモータ３のフレーム４でできる。

【００２８】以上に対して、図４ないし図７は本発明の第２及び第３実施例を示すもので、それぞれ、第１実施例と同一の部分には同一の符号を付して説明を省略し、異なる部分についてのみ述べる。

【００２９】［第２実施例］図４及び図５に示す第２実

施例においては、上述のＳＬ端子４２に代わる接続器としてのＳＬ端子５１を、ＳＬ端子４２より図中上方に大きく形成して、これのハウジング５２の最上部の外周に、当接部５３を例えばその全周にわたる鍔状に形成し、それよりもモータ３のフレーム奥壁４ｂの板厚相当の距離を隔てた下側部分の外周に、係止部５４を例えば複数の部分的な爪状に形成している。

【００３０】なお、当接部５３は、その大きさをモータ３のフレーム４から径方向に突出しない大きさに留めている。又、ハウジング５２は、当接部５３と係止部５４とを除く胴回り寸法を、モータ３の給電用の開口部３１とほゞ同一に形成している。更に、ハウジング５２は、前述の挿入口４６と同様の挿入口５５を有すると共に、前述の導体４４及び保持体４５と同様の導体５６及び保持体５７を収納する主体部５２ａと、前述の接続部４７と同様の接続部５８を収納する雄形コネクタハウジング部５２ｂとを有する構成としている。

【００３１】この構成で、ＳＬ端子５１を、モータ３の給電用開口部３１に挿入して、係止部５４をフレーム４の内面に係止させ、当接部５３をフレーム４の外面に当接させることにより、開口部３１に装着している、又、それと同時に、雄形コネクタハウジング部５２ｂを端子台３６の雌形コネクタ４０内に挿入して、接続部５８をターミナル３８に接続している。このように構成したものでは、ＳＬ端子５１の組込みが、その全部をモータ３のフレーム４内に挿入するまでもなくでき、それだけ、ＳＬ端子５１の組込みが容易にできる。

【００３２】又、この場合、ＳＬ端子５１がフレーム４の外面に当接する当接部５３を有することにより、ＳＬ端子５１をフレーム４に組込む折り（ＳＬ端子５１をフレーム４内部の接続相手である端子台３６の雌形コネクタ４０に差込み接続する折り）や、組込んだＳＬ端子５１に給電線２０を差込み接続する折りの受けが、当接部５３が当接したフレーム４ででき、もって、端子台３６にこれの固定子巻線７ａとの接続を損ねるような大きな力が作用することを防止できる。

【００３３】加えて、ＳＬ端子５１はフレーム４の内面に係止される係止部５４をも有しており、これによって、フレーム４に組込んだ（雌形コネクタ４０に差込み接続した）ＳＬ端子５１の抜けが、フレーム４の内面に係止された係止部５４でできると共に、ＳＬ端子５１に差込んだ給電線２０を引き抜く折りの止めが、係止部５４を係止したフレーム４ででき、もって、この場合も、端子台３６にこれの固定子巻線７ａとの接続を損ねるような大きな力が作用することを防止できる。

【００３４】［第３実施例］図６及び図７に示す第３実施例においては、モータ３のフレーム４の奥壁４ｂに給電用の開口部６１を形成すると共に、モータ３のフレーム４の周側壁４ａにも給電用の開口部６２を形成している。この場合、それらの開口部６１，６２は一つに連ね

ており、これらに前述のＳＬ端子４２，５１に代わる接続器としてのＳＬ端子６３又はＳＬ端子６４を選択装着するようにしている（図６はＳＬ端子６３を装着した状態を示し、図７はＳＬ端子６４を装着した状態を示している）。

【００３５】上記両ＳＬ端子６３，６４のうち、ＳＬ端子６３は、ハウジング６５に、前述の挿入口４６と同様（上方開口）の挿入口６６を有すると共に、前述の導体４４及び保持体４５と同様の導体６７及び保持体６８を収納する主体部６５ａと、前述の接続部４７と違って横向きの接続部６９を収納する雄形コネクタハウジング部６５ｂとを有する構成としている。更に、ハウジング６５は、主体部６５ａから図６中右方へ延長した形態の延長部６５ｃを有しており、そのほか、上述の当接部５３と同様の当接部７０を有すると共に、上述の係止部５４と同様の係止部７１を有している。

【００３６】一方、ＳＬ端子６４は、ハウジング７２に、前述の挿入口４６と違って側方に開口する挿入口７３を有すると共に、前述の導体４４及び保持体４５と違って横向きの導体７４及び保持体７５を収納する主体部７２ａと、前述の接続部４７と違って横向きの接続部７６を収納する雄形コネクタハウジング部７２ｂとを有する構成としている。更に、ハウジング７２は、主体部７２ａから図７中上方へ延長した形態の延長部７２ｃを有しており、そのほか、上述の当接部５３と同様の当接部７７を形成すると共に、上述の係止部５４と同様の係止部７８を形成している。

【００３７】そして、それらに対し、モータ３内の端子台３６には、前述のターミナル３８と違って横向きのターミナル７９と、これを包囲して側方に開口するコネクタハウジング８０とで、雌形のコネクタ８１を構成している。この構成で、開口部６１，６２にＳＬ端子６３を装着する場合には、図６に示したように、ＳＬ端子６３を、開口部６１，６２に挿入して、係止部７１をフレーム４の内面に係止させ、当接部７０をフレーム４の外面に当接させる。これにより又、雄形コネクタハウジング部６５ｂが端子台３６の雌形コネクタ８１内に挿入されて、接続部６９がターミナル７９に接続される。

【００３８】かくして開口部６１，６２にＳＬ端子６３を装着した状態では、給電線２０は、モータ３の奥方である上方から挿入口６６を通してＳＬ端子６３内に差込むことにより、導体６７と保持体６８とに挟持されて導体６７に、ひいては上記接続部６９とターミナル７９との接続部分から、更に端子台３６の導体３７（接続回路）を介して、前記固定子７の巻線７ａに電気接続され、同時に機械的にも保持される。従って、ＳＬ端子６３は給電線２０を奥方から接続する接続器である。又、この状態では、ＳＬ端子６３は、給電線２０の接続部分（ハウジング６５の主体部６５ａ）で開口部６１を閉塞し、開口部６２をハウジング６５の延長部６５ｃで閉塞する。

【００３９】一方、開口部６１，６２にＳＬ端子６４を装着する場合には、図７に示したように、ＳＬ端子６４を、開口部６１，６２に挿入して、係止部７８をフレーム４の内面に係止させ、当接部７７をフレーム４の外面に当接させる。これにより又、雄形コネクタハウジング部７２ｂが端子台３６の雌形コネクタ８１内に挿入されて、接続部７６がターミナル７９に接続される。

【００４０】かくして開口部６１，６２にＳＬ端子６４を装着した状態では、給電線２０は、モータ３の側方から挿入口７３を通してＳＬ端子６４内に差込むことにより、導体７４と保持体７５とに挟持されて導体７４に、ひいては上記接続部７６とターミナル７９との接続部分から、更に端子台３６の導体３７（接続回路）を介して、前記固定子７の巻線７ａに電気接続され、同時に機械的にも保持される。従って、ＳＬ端子６４は給電線２０を側方から接続する接続器である。又、この状態では、ＳＬ端子６４は、給電線２０の接続部分（ハウジング７２の主体部７２ａ）で開口部６２を閉塞し、開口部６１をハウジング７２の延長部７２ｃで閉塞する。

【００４１】なお、これらの場合、フレーム４の外面に当接した当接部７０，７７は、ともにフレーム４の外方に位置するものの、これらの突出寸法は、換気扇の外枠１におけるモータ取付用の開口部２の周縁部に掛からない寸法、すなわち、外枠１内からのモータ３の取外しを阻害しない寸法としている。

【００４２】このように構成したものでは、換気扇の取付状態で、該換気扇の外枠１外に突出したモータ３の軸方向外方である奥方にスペースの余裕があれば、給電線２０を奥方から接続する接続器であるＳＬ端子６３を開口部６１，６２に装着すると良く、この場合には、前述同様に、換気扇の外枠１からのモータ３の取外しが容易にできる。

【００４３】一方、図７に示したように、モータ３の軸方向外方（奥方）に低い屋根裏８２があるなどでスペースの余裕がなければ（モータ３の径方向外方である側方にスペースの余裕があれば）、給電線２０を側方から接続する接続器であるＳＬ端子６４を開口部６１，６２に装着すると良く、かくして、換気扇の取付箇所の状況に応じた給電線２０の接続方向の選択までできる。

【００４４】加えて、この場合、開口部６１，６２に装着されたＳＬ端子６３，６４は、給電線２０の接続部分で開口部６１，６２のうちの一方を閉塞し、他方をハウジング６５，７２の延長部６５ａ，７２ａで閉塞するようにしている。これにより、給電用の開口部６１，６２を余すことなく閉塞でき、モータ３の密閉性を損なうことのないようにできる。

【００４５】なお、開口部６１，６２は一つに連ねず、別々に形成されていても良い。又、全実施例を通じて、ＳＬ端子で例示した接続器は、ＳＬ端子以外、例えば給

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電線２０をねじ締め等で接続する雄形のコネクタとして、雌形コネクタ４０，８１に差し込み接続するようにしても良い。更に、モータ３内には端子台３６を具えず、雌形コネクタ４０，８１など、接続器の接続相手から接続線を介して固定子巻線７ａに接続する構成としても良い。

【００４６】そのほか、接続器には、本来、端子台３６の回路構成に含まれる電流ヒューズなど他の必要部品を内蔵しても良く、それによって、端子台３６の回路構成を簡単になすことができる。更に、換気扇も、ダクト用換気扇には限られず、パイプ用換気扇などであっても良い。

【００４７】

【発明の効果】以上説明したように、本発明の換気扇用モータによれば、主として、給電用の開口部を、フレームの換気扇外枠より外方に位置する部分の奥壁に形成したことより、換気扇の外枠からの取外しが容易にできる。又、特に、給電用の開口部をフレームの奥壁と周側壁とに形成し、これらの開口部に、給電線を奥方から接続する接続器と、給電線を側方から接続する接続器との

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いずれかを選択装着可能としたものでは、換気扇取付箇所の状況に応じた給電線の接続方向の選択までできる。

【図面の簡単な説明】

【図１】本発明の第１実施例を示す、モータの一部を破断したダクト用換気扇全体の取付状態における縦断面図

【図２】モータ単体の縦断面図

【図３】モータの主要部分の拡大縦断面図

【図４】本発明の第２実施例を示す図２相当図

【図５】図３相当図

【図６】本発明の第３実施例を示す図３相当図

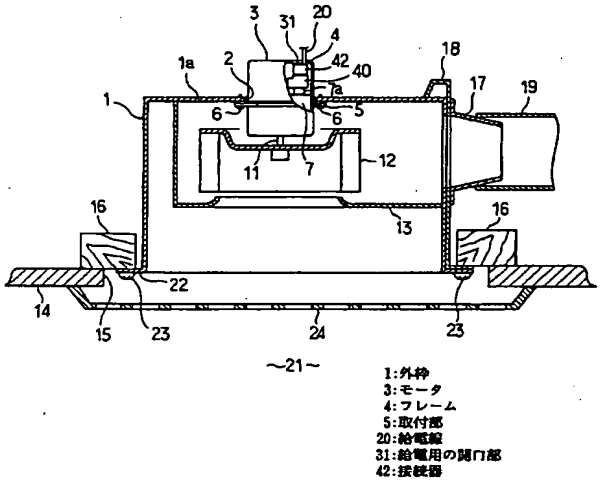
【図７】装着した接続器が異なる図３相当図

【図８】従来例を示す図１相当図

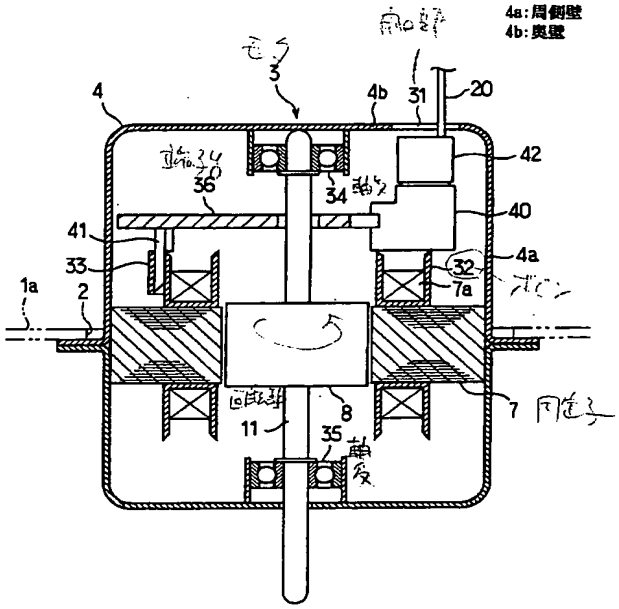
【符号の説明】

１は外枠、３はモータ、４はフレーム、４ａは周側壁、４ｂは奥壁、５はフランジ（取付部）、２０は給電線、３１は給電用の開口部、４２，５１はＳＬ端子（接続器）、５３は当接部、５４は係止部、６１，６２は給電用の開口部、６３，６４はＳＬ端子（接続器）、６５はハウジング、６５ｃは延長部、７２はハウジング、７２ｃは延長部を示す。

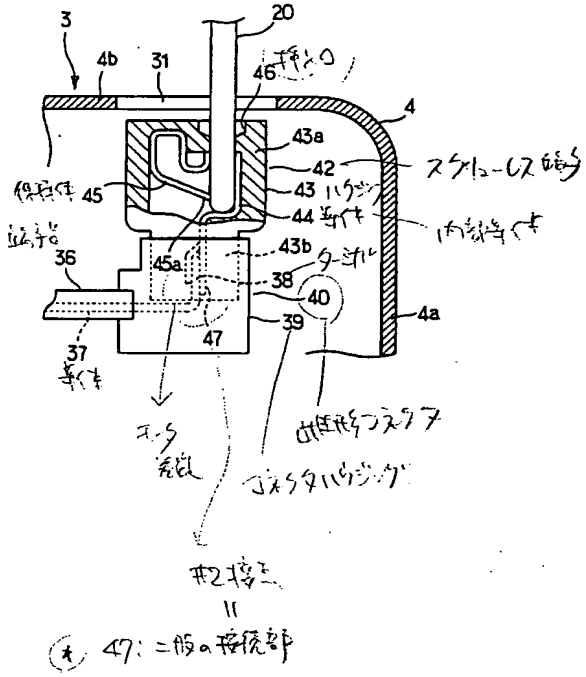
【図１】



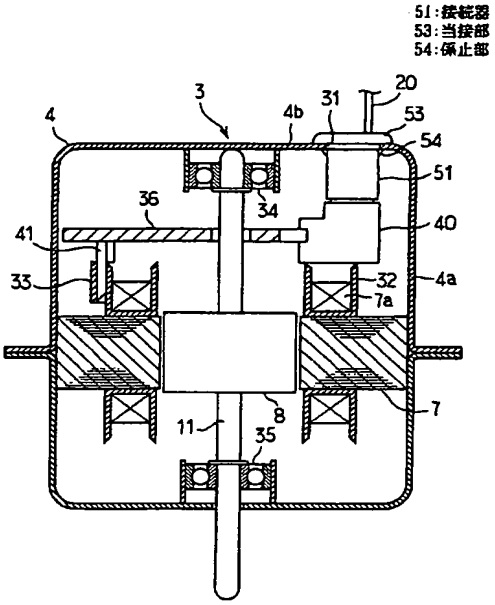
【図２】



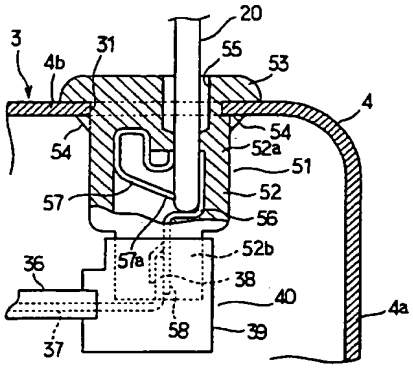
【図３】


3
4b
31
20
46
4
43a
42
43
44
45
45a
43b
38
40
39
47
36
37
4a

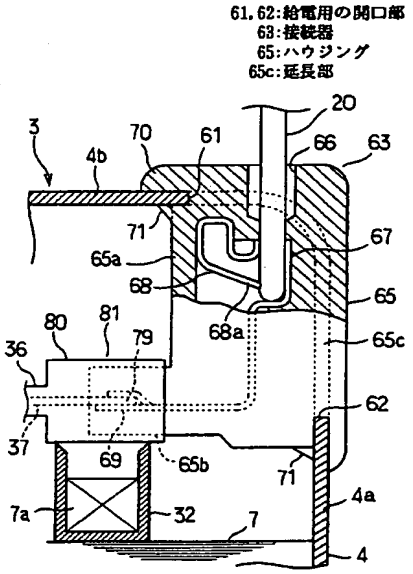
【図４】


51:接続器
53:当接部
54:係止部
3
4b
31
20
53
54
51
4
36
34
41
40
33
32
4a
7a
7
11
8
35

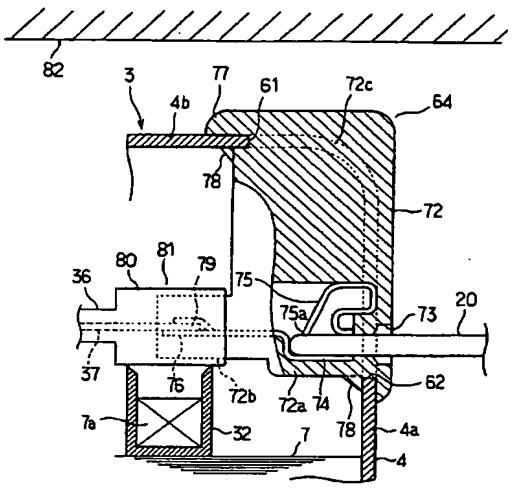
【図５】


3
4b
31
20
55
53
4
54
54
52a
51
52
57
56
57a
52b
36
38
40
58
39
37
4a

【図６】

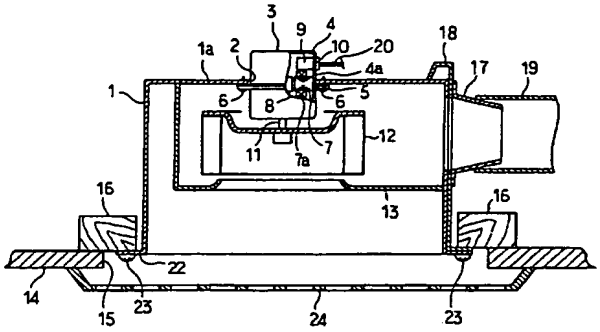

61,62:給電用の開口部
63:接続器
65:ハウジング
65c:延長部
3
4b
70
61
20
66
63
71
67
65a
68
65
68a
80
81
79
65c
36
62
37
69
65b
71
4a
7a
32
7
4

【図７】



64：接続器
72：ハウジング
72c：延長部

【図８】



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